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U.S. ARMY-BAYLOR UNIVERSITY GRADUATE PROGRAM
IN HEALTH CARE ADMINISTRATION

CREATION OF A REVENUE SUPPORTED SURGICAL SYSTEM
FOR
MARTIN ARMY COMMUNITY HOSPITAL

GRADUATE MANAGEMENT PROJECT
SUBMITTED TO THE FACULTY OF BAYLOR UNIVERSITY
IN PARTIAL FULFILLMENT OF THE DEGREE OF
MASTER OF HEALTH ADMINISTRATION

BY
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FORT BENNING, GEORGIA

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This Graduate Management Project would not have been possible without the support and motivation of the hospital's command element, my family, and several close friends.

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there to listen to my latest dilemma and provide appropriate guidance. Not only does she excel in all her endeavors, she has the same warped sense of humor that I do. She contributed immeasurably to the success of my residency year.

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Lastly, I would like to thank my Baylor compatriots, Marsha Patrick, Guy Kiyokawa, Dan Cornwell, Patrick Tracy, Tom Berry, Chuck Tanner, Phil Kahue, and Mike Giovino for their friendship and encouragement during our Baylor experience.

ABSTRACT

Martin Army Community Hospital (MACH), Fort Benning, Georgia, has an underutilized surgery department. All of MACH's surgical services have backlogs of less than thirty days for elective surgery. This underutilization is complicated by the fact that MACH must perform a specified quantity and variety of surgical procedures in order to maintain its educational base for the Family Practice Residency Program, and also to enable surgeons to become board-eligible. The importance of the physician training program, combined with the high costs of equipping, staffing, and maintaining hospital operating rooms, demands that surgical resources be utilized effectively and efficiently. The purpose of this study is to ascertain whether it is cost beneficial for MACH to sell excess elective surgical services to Noble Army Community Hospital (NACH), Fort McClellan, Alabama, and Lyster Army Community Hospital (LACH), Fort Rucker, Alabama. An analytical and quantitative methodology was used to evaluate the cost effectiveness of the proposal. Data was collected from Army medical management information systems as well as

interrogative methods at the three community hospitals. Surgical services desired by NACH and LACH were matched with excess surgical services available at MACH. Travel costs as well as CHAMPUS and Supplemental Care costs associated with the desired surgical procedures were then analyzed to determine if it was cost beneficial for MACH to perform the surgical procedures. The results indicated that all the surgical procedures analyzed were cost beneficial to sell to NACH and LACH. A follow-on study should include a patient satisfaction and desires survey to determine if NACH and LACH patients are willing to make the journey to MACH to obtain surgical care.

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CHAPTER 1

INTRODUCTION

As we enter the mid-1990s, it is becoming increasingly clear that the military medical community must develop a more innovative method to meet its patient care and readiness missions. The increasing demands of a contingency-based Army, coupled with declining funds and personnel authorizations, are compelling hospital commanders to improve patient care and increase the efficiency of their medical treatment facilities (Parent 1993).

In spite of diminishing resources, there is a public expectation that military hospitals should provide more effective and efficient treatment (Collins 1991). This is increasingly evident in the delivery of surgical care as surgical costs have increased up to 4 percent of the United States' entire gross national product. As a result of cost containment measures, hospital inpatient populations are sicker and more procedure-intensive (Munoz et al. 1990).

Efficient management of surgical procedures is more important than ever before. The high costs of equipping, staffing, and maintaining hospital operating rooms demand that surgical resources be utilized effectively and efficiently (Gordon et al 1988).

Description of the Organization

Martin Army Community Hospital (MACH) is a 176-bed community hospital located at Fort Benning, Georgia. Fort Benning, a U.S. Army Training and Doctrine Command (TRADOC) installation, is the "Home of the Infantry," and has various Training and Doctrine Command (TRADOC), Forces Command (FORSCOM), Special Operations Command (SOCOM), and Medical Command (MEDCOM) units assigned to it. The Fort Benning installation is located in the Chattahoochee Valley in southwest Georgia. A portion of Fort Benning is also located in Alabama.

Constructed in 1958, MACH serves a population of approximately 78,000 active duty, retiree, and family member beneficiaries. Services include those provided by most full-service community hospitals, to include surgical, medical, family practice, and psychiatric care.

In addition to its direct medical care mission, MACH has the oldest Family Practice Residency Program in the Army. Currently, the program has over thirty residents in training. MACH also conducts the clinical portion of the Army's Physician Assistant Program and a residency in health care administration.

In order to execute its medical mission, MACH employs over 1,400 employees; approximately 680 military and 750 civilian personnel. The staff includes over 110 physicians

and 150 registered nurses. MACH's annual operating budget is approximately \$98 million (Kussman 1994).

Conditions Which Prompted the Study

As a result of Department of Defense's downsizing, MACH's beneficiary population has decreased by over two thousand over the past year and is projected to further decrease. Additionally, the general population is healthier today than in the past due to increased public education and prevention programs (Kronenfeld 1993). The shrinking beneficiary population, combined with an overall healthier population, has resulted in a 5 percent reduction in surgical procedures performed at MACH from FY93 to FY94 (MEPRS).

MACH recently received a full complement of general surgeons, orthopedic surgeons, obstetricians, ophthalmologists, and urologists. Two contract anesthetists were also recently added to the staff of the facility. Currently, there is a general feeling throughout the organization that MACH's surgery capacity is underutilized (Walton 1994).

All MACH surgical services have an elective surgical backlog of less than thirty days. The majority of the surgical services have less than a two week backlog; however, the general surgery service has only a three day backlog. The limited surgical backlog has made it difficult to maintain a pool from which to fill last minute surgery

cancellations (Lyons 1994).

To complicate the issue, the majority of the recently assigned physicians are newly out of their residencies. As such, they need to perform specific types and quantities of surgery in order to become board-eligible. MACH also must perform a specified quantity and variety of surgical procedures to maintain its educational base for the Family Practice Residency Program (Lyons 1994).

In early 1994, in response to the perceived problem of excess surgical capacity, MACH's leadership established a goal to solve the surgical procedure issue. The goal was included in MACH's strategic plan and was entitled "Create a Revenue Supported Health Care System Plan" (Kussman 1994). This action was consistent with Burke's (1992) concept that evolving surgical technology will force hospitals to reshape their long-range strategies.

Upon my arrival at MACH, my preceptor, Colonel Ira F. Walton III, presented me with over fifteen potential graduate management projects, one of which was "Create a Revenue Supported Health Care System Plan." After detailed analysis, we determined that this would be a project not only of great value to MACH, but could also fulfill the requirements of my graduate management project.

Statement of the Problem

In order to control costs in this era of diminishing resources and managed care environment, Martin Army

Community Hospital must make maximum and efficient use of its available resources. This study is intended to answer the research question, "Can Martin Army Community Hospital economically expand the utilization of its excess surgical resources?"

Literature Review

Hospitals and other health care organizations face a very uncertain financial future. Private, nonprofit, and governmental health care organizations, as well as the general public, are all concerned about the rising costs of health care. This period of uncertainty has been further complicated by the health care reform debate in the United States. Even though national reform didn't materialize, the important issues have not gone away (Voelker 1995). Horowitz and Kleinman (1994) suggest that this period of uncertainty has forced businesses to negotiate for health care services directly with hospitals and other health care organizations.

The implementation of diagnosis-related groups (DRGs) under the prospective payment system (PPS) has forced hospitals to decrease their costs of providing health care. Deatsch (1991) suggests that most hospitals have eliminated the inefficiencies in their operation and cannot identify many more areas in which to reduce costs. He states that the only solution is for hospitals to improve the revenue side of the equation. Deatsch identifies expansion of

services and contractual relationships as two methods that hospitals can utilize to increase revenues.

Glasson (1994) contends that inefficiencies, such as administrative waste, excessive liability costs, expensive technology, and overutilization of diagnostic tests, have not been eliminated by hospitals. He advocates that all responsible parties take responsibility for eliminating unjustified expenditures and make all efforts to control health care costs.

Health maintenance organizations (HMOs) have been purchasing services from hospitals for many years. This trend greatly increased in the 1970s when HMOs became more common. In fact, many of the purchasing contracts were initiated by hospitals. A study in 1990 showed that almost 100 percent of 102 hospital surveyed had contracts with HMOs to provide surgical services (Feldman et al. 1990).

Selling excess services to other hospitals is beneficial to hospitals in a multitude of ways. Not only is it cost effective, but hospital executives can spend more time developing institutions that support the needs of the community (Eubanks 1992). Burgin (1995) contends that 40 percent of future cost savings for hospitals will come from selling services to other hospitals.

Collaboration between hospitals is becoming more commonplace. In Maine, collaboration has become the norm and not the exception, as regional health networks have

increased. In 1992, Maine passed the Hospital Cooperation Act. The Act was designed to stimulate cooperation and collaboration among the state's hospitals (Cerne 1993).

A survey of hospitals conducted in 1992 indicated that in the past two years 65 percent of respondents have entered into new collaborative arrangements with other hospitals. Of this total, 25 percent of the hospitals engaged in direct contracting for services from other hospitals (Hamilton 1993).

There are many factors that influence to which hospital a patient is admitted. A few of the factors indicated by Dranove, White, and Wu (1993) include: the distance to alternative hospitals, the availability of appropriate services, the preferences of admitting physician, and the willingness of hospitals to accept specific insurance payments.

Cohen (1985) asserts that the probability of patients picking a hospital for their treatment varies inversely with distance and directly with the size of the facility. He also contends that patients will travel further to obtain inpatient care than they would to obtain outpatient care.

Bronstein and Morrissey (1991) found that patients regularly travel long distances for health care. In their study they found that women will endure inconvenience and higher travel costs and travel farther to obtain obstetrics care if they perceive it to be superior to care available

nearby.

Cohen (1985) found that patients' medical conditions determined the distance that they were willing to travel to obtain medical care. He concluded that patients were willing to travel a great distance to obtain surgical and cardiac treatment, but not as far for dental or obstetrical services.

Nofal and Moran (1990) conducted a study to determine if dependents of Royal Air Force (RAF) personnel were willing to travel to a distant RAF hospital, located over seventy miles away, for tonsillectomies. Their results showed that military patients were willing to travel a significant distance to obtain elective surgical care.

Howell (et al. 1990) performed a similar study on Army and RAF patients to see if they were willing to travel long distances to obtain elective surgery. The results indicated that approximately 50 percent of the patients were willing to travel 120 miles to have the surgery performed.

In summary, the literature generally indicates that hospitals are selling excess services to other hospitals. It also indicates that patients are amenable to traveling significant distances to undergo elective surgical procedures.

Purpose

The purpose of this study is to ascertain whether it is cost beneficial for Martin Army Community Hospital to sell

excess elective surgical services to Noble Army Community Hospital (NACH), Fort McClellan, Alabama, and Lyster Army Community Hospital (LACH), Fort Rucker, Alabama. For purposes of this study, Hand, Levin and Staziola's (1990) definition of elective surgery is used. It states, "An elective case is defined as one scheduled sufficiently in advance to be included on the typed operating room schedule, which means the case had to be phoned in before 2:00 p.m. on the day prior to surgery." To accomplish the purpose of this study, the following additional objectives are established:

1. Determine if excess surgical capacity exists at Martin Army Community Hospital, and if so, what types of surgical services.
2. Determine whether Noble Army Community Hospital and Lyster Army Community Hospital desire to purchase surgical services from Martin Army Community Hospital, and if so, what types of surgical services.
3. Match excess surgical services at Martin Army Community Hospital with those demanded by Noble Army Community Hospital and Lyster Army Community Hospital.
4. Determine additional costs for Martin Army Community Hospital associated with providing surgical services for Noble Army Community Hospital and Lyster Army Community Hospital.
5. Determine the costs incurred by Noble Army

Community Hospital and Lyster Army Community Hospital under CHAMPUS and Supplemental Care for surgical services that have the potential to be referred to Martin Army Community Hospital.

6. Perform a cost-benefit analysis to determine whether it is economically profitable for Martin Army Community Hospital to provide surgical services to Noble Army Community Hospital and Lyster Army Community Hospital.

CHAPTER 2

METHOD AND PROCEDURES

The study design can be characterized as descriptive, quantitative, and analytical in nature. Available data was analyzed to determine whether Martin Army Community Hospital had excess surgical capacity, and if so, whether it would be cost effective to sell those services to two nearby Army medical treatment facilities located in Alabama. Results are discussed in Chapter 3.

Data Sources and Collection

Data for this study was obtained from both primary and secondary sources. Primary source data was obtained through both interrogative and observational methods. Interviews at MACH were conducted with the Deputy Commander for Clinical Services (DCCS); Deputy Commander for Administration (DCA); Chief, Department of Nursing; Chief, Department of Surgery; Chief, General Surgery Service; Chief, Orthopedic Service; Chief, Obstetrics-Gynecology Service; Chief, Ophthalmology Service; Chief, Urology Service; Chief, Anesthesiology Service; Chief, Operating Room Nursing Service; Chief, Resource Management Division; Head Nurse, Operating Room; NCOIC, Operating Room; operating room receptionist; and

surgery clinic secretaries. Interviews at NACH and LACH were conducted with their respective Deputy Commander for Clinical Services, Deputy Commander for Administration, Chief, Resource Management Division, and Chief, Coordinated Care Division.

Pertinent Department of the Defense and Department of the Army publications that were reviewed include: DOD 6010.8-R, Civilian Health and Medical Program of the Uniformed Services; AR 351-3, Professional Training of Army Medical Department Personnel; AR 40-121, Uniformed Services Health Benefits Program; AR 40-331, Medical Expense and Performance Reporting Systems; and DA Pamphlet 37-100-95, The Army Management Structure. Martin Army Community Hospital (MACH) Medical Department Activity (MEDDAC) publications reviewed include: MEDDAC Regulation 40-23, Medical Services Utilization Management; MEDDAC Regulation 40-34, Designation of Hospital Wards; MEDDAC Regulation 40-36, Hospital Analgesia/Anesthesia Plan; MEDDAC Regulation 40-42, Patient Appointment Service; MEDDAC Regulation 40-52, Professional Training of Army Medical Department; MEDDAC Regulation 40-59, Governing Body and Medical Staff Bylaws; MEDDAC Regulation 40-62, Medical Service Review and Approval of Clinical Practice Guidelines; MEDDAC Regulation 40-67, Preparation of Patients for Operative Procedures; MEDDAC Regulation 40-90, Utilization of Civilian Medical Treatment Facilities (Supplemental and Cooperative Care); and MEDDAC

Pamphlet 700-7, Material Distribution System. Additionally, internal standing operating procedures (SOPs) were reviewed for pertinent hospital sections. Secondary sources used in data gathering are described in the following paragraphs.

Operating Room Log

MACH used the Operating Room Scheduling Office System (ORSOS) Case Log to schedule surgical procedures in the operating room. Atwork Corporation (1984) describes ORSOS as a surgical department management information system which utilizes microcomputers in helping surgical departments increase their effectiveness and efficiency through better information handling. The ORSOS also automates the surgical procedure appointment book and produces the operating room case log (Atwork Corporation 1984).

The ORSOS was the source for operating room information such as: case number, procedure start time, procedure end time, circulating nurse, scrub nurse, physician, and the service assignment (i.e., general surgery, urology) of the physician performing the procedure. The ORSOS also contained the primary diagnosis that prompted the surgery. Data was obtained from the ORSOS for Fiscal Year 1994 (FY94) (1 October 1993 through 30 September 1994).

The ORSOS also indicated the amount of time that each service had scheduled in the operating room through the use of block scheduling. Breslawski and Hamilton (1991) define block scheduling as, "the allocation of specific blocks of

time during which individual surgical services are given scheduling priority for a specific operating room." Block scheduling is generally considered to be the most efficient method of scheduling surgery (Drier, Van Winkle and Watchler 1984).

Medical Expense and Performance Reporting System

The Medical Expense and Performance Reporting System (MEPRS) provides cost and workload information for military medical treatment facilities. In essence, it is used to obtain facility cost, utilization, and staffing data within a standardized set of functional areas and work centers. MEPRS allocates ancillary costs (pharmacy, laboratory, and radiology) and support costs (laundry, utilities, etc.) to inpatient, ambulatory, dental, special programs, and medical readiness work centers. Using step-down methodology, MEPRS allocates ancillary costs to work centers based upon the amount of work performed for each work center. Support costs are allocated to work stations based upon the work center's share of the total cost.

In this study, MEPRS was used to obtain the monthly number of surgical procedures performed by service during FY94 at MACH. It was also used to obtain the monthly amount of operating room time by service for the same period. The variable cost for each additional surgical procedure by service was approximated using FY94 MEPRS data. Due to the limitations of MEPRS and other existing computer systems at

MACH, the costs associated with individual surgical procedures could not be ascertained. This is a problem that may be corrected with the implementation of the Composite Health Care System (Rowland 1994).

Medical Analysis Support System

The Medical Analysis Support System (MASS) is a military medical information system used to support the services' managed care initiatives. It can provide workload expense and staffing data from MEPRS, clinical records data from biometrics clinical records extracts, claims and clinical data from the Tri-Service CHAMPUS Statistical Database, and manpower data.

For the purposes of this study, MASS was used to obtain data for surgery (by diagnosis-related groups) performed at MACH during FY94. MASS was also used to obtain numbers and associated costs for specified CHAMPUS surgical procedures performed within the forty mile catchment areas of Noble Army Community Hospital and Lyster Army Community Hospital. Information on surgical cases, identified by surgical service and diagnosis-related groups (DRGs), was collected for care obtained under both supplemental care and CHAMPUS for FY94 at NACH and LACH.

Patient Administration Systems and Biostatistics Activity

The Patient Administration Systems and Biostatistics Activity (PASBA) was used to obtain CHAMPUS data from MASS

for NACH's and LACH's catchment areas. PASBA was utilized because the MASS system would not enable an outside source, such as MACH, to obtain data regarding another medical treatment facility. PASBA was also used to obtain the top one-hundred inpatient procedures performed at NACH and LACH during FY94. Additionally, Emma Jane Frazier at PASBA was used as a consultant regarding other medical information questions that were encountered during the course of this study.

Data Analyses

First, I determined if excess surgical capacity existed at MACH. MACH utilized block operating room scheduling that allocated a specified number of operating rooms daily to the various surgical services. The number of rooms allocated was based upon operating room and support personnel availability. The allocation of operating rooms within MACH was obtained from interviews with the Chief, Department of Surgery; Chief, Anesthesiology Service; and Chief, Operating Room Nursing Service. This equated to a certain number of operating room minutes per service, per month. Next, I obtained from ORSOS the number of operating room procedures, both during duty hours and after duty hours, performed by each service during FY94. Using ORSOS and MEPRS data, calculations were performed to compute both the average procedure length by service and past historical average of operating room minutes used per service, per month. The

second figure was obtained by multiplying the average number of procedures per service, per month by the average number of minutes per procedure, per service. I compared this number to the number of operating room minutes available per service, per month utilizing the aforementioned block surgery schedule. The use of historical averages is consistent with Magerlein and Martin's (1978) review of surgical demand.

After determining that MACH had excess surgical capacity, I further determined exactly how much excess capacity was available by specific surgical service. It is unrealistic to expect that operating rooms will be utilized 100% of the time due to a variety of factors, including cancelled surgeries, late starts, early finishes, and a shortage of nursing staff. McQuarrie (1981) suggests that an operating room productivity rate of 80% is acceptable. This is consistent with Ide, Kirby, and Starck's (1992) review of operating room productivity that suggested a productivity target of 80%.

Consistent with these studies, and after conferring with the Deputy Commander for Clinical Services, Deputy Commander for Administration, and Chief, Department of Surgery, I used an operating room productivity rate of 80% as full capacity for MACH. To determine the excess surgery time per service per month, I subtracted the historical average number of minutes per service per month from the 80%

productivity target rate. I divided this figure by the average procedure length per service in order to determine the number of excess procedures available per service per month. This method is consistent with Przasnyski's (1986) methods of determining operating room utilization.

Next, I interviewed MACH's Chief, Department of Surgery. Based upon projected personnel staffing and constraints, he felt that General Surgery Service, Orthopedic Service, Obstetrics-Gynecology Service, Ophthalmology Service, and Urology Service had the capabilities to perform additional surgical procedures in FY95. I presented the chiefs of the respective services with a list of surgical procedures performed at MACH during FY94. This list was obtained from MASS. From this list, the service chiefs compiled a list of currently performed elective surgical procedures they felt could be performed in greater volume at MACH.

I also presented the chiefs with a very limited list of CHAMPUS and Supplemental Care surgical procedures performed during FY94 in MACH's forty mile catchment area to see which procedures could have been performed at MACH. After review, the chiefs unanimously agree that the identified CHAMPUS and Supplemental Care surgical procedures had been scrutinized properly by MACH's Utilization Management Program and were beyond the scope of care of MACH. In essence, there were no potentially recoverable surgical procedures in MACH's forty

mile catchment area.

Next, I determined the types of elective surgical services that NACH and LACH desired to purchase from MACH. In doing so, I traveled to NACH and LACH and conducted interviews with the Deputy Commander for Administration; Deputy Commander for Clinical Services; Chief, Resource Management Division; and Chief, Coordinated Care Division. In addition to a multitude of other questions, I presented them with the list of potential additional elective surgical procedures that was compiled by MACH's surgery service chiefs. I asked NACH and LACH's assembled leadership to identify the surgical procedures on the list that they desired to purchase from MACH. I also analyzed data I obtained from MASS that indicated the historical number of procedures (by DRG) that the hospitals purchased in FY94 under Supplemental Care and CHAMPUS.

I then discussed the number and types of services desired by NACH and LACH with MACH's DCCS and DCA to obtain their concurrence with the findings. Priority for MACH's excess surgical capacity was to go to NACH and LACH's Supplemental Care patients. Due to the small historical demand and response by the two facilities, this was not necessary. MACH's excess capacity exceeded the number of surgical procedures demanded by Supplemental Care patients, so the surgical needs of NACH's and LACH's CHAMPUS patients were analyzed to fill the void. This was done prior to

ascertaining MACH's cost of providing the additional surgical services.

For the purposes of this study, MACH's cost of providing additional surgical procedures was the same as the amount of additional supply costs per procedure obtained from MEPRS. This is consistent with my first assumption, there will be no increased personnel or support costs incurred by performing the additional surgeries.

The use of additional supply costs for the pricing of excess surgical procedures was directed by the Deputy Commander of Administration. This guidance was intended to keep prices to a minimum in order to entice NACH and LACH to purchase potential excess surgical procedures from MACH. MACH would benefit in two ways: (1) recently assigned physicians would be able to perform specific types and quantities of surgery in order to become board-eligible and (2) a specified quantity and variety of surgical procedures would be performed to maintain the educational base for the Family Practice Residency Program.

The costs of providing additional surgical procedures were computed using supply costs for MACH's surgical suite obtained from MEPRS. The supply costs were prorated by service based upon the historical operating room workload provided by MEPRS. The amount prorated by service was divided by total procedures per service to determine the average supply cost per procedure, per service.

Using the Department of Defense Joint Travel Regulation (JTR), I then computed the travel costs associated with travelling to and from NACH and LACH. I added this figure to the average supply cost per procedure, per service of the procedures desired by NACH and LACH. I used this figure as the cost of providing an additional surgical procedure per specific surgical service.

I compared this figure to the cost of surgical cases (by DRG) that NACH and LACH paid in FY94 under Supplemental Care and CHAMPUS. By comparing MACH's costs per surgical procedure, per service to costs that NACH and LACH paid for the same procedure through Supplemental Care or CHAMPUS, a reasonable approximation was made to determine if the proposal was cost beneficial to MACH. If MACH's revenue earned by performing the additional surgical procedures were projected to be greater than the cost of performing the procedures, then MACH should perform the procedures.

Validity and Reliability

Reliability is "the degree of consistency with which an instrument measures the attribute it is designed to measure" (Polit and Hungler 1983). The ORSOS was assumed to be reliable and valid. Input into the ORSOS was analyzed for reliability. The operating room receptionist was the only one who entered data in the ORSOS. The same receptionist put all FY94 data into the ORSOS. The data was transferred to the ORSOS from the Operation Request and Worksheet (DA

Form 4107). The circulating nurse in the operating room filled in the start and end time on the DA Form 4107, and the surgeon annotated the type and priority of surgery. The surgeon's service was easily determined by his identification. The ORSOS was reliable in that it accurately measured and collected the data for which it was designed.

"Validity refers to the degree to which an instrument measures what it is supposed to be measuring" (Polit and Hungler 1983). The validity of the average time for surgical procedures was accurately ascertained, but the costs for surgical procedures performed at MACH could not be accurately determined, so they were assumed. The average time for surgical procedures was consistently defined across the surgical services. For the purposes of this study, the average procedure length included the average length of the surgical procedure by service (computed from the ORSOS), plus an additional twenty minutes used by nursing personnel to clean and prepare the operating room for the next procedure.

Data obtained from MEPRS, MASS, and PASBA were assumed to be reliable and valid because of the specific procedures in existence to input data into the systems. Each system is also examined externally for both reliability and validity, and is regulated for use by the Department of Defense. Additionally, the staff nurse who entered the operating room

data into MEPRS during FY94 was properly trained and did not change during the period.

The data obtained from MASS may have some valid concerns due to the payment mechanisms associated with CHAMPUS. CHAMPUS claims may be filed until the close of the calendar year following the medical treatment. This fact implies that the data provided by MASS for FY94 NACH and LACH CHAMPUS procedures may be incomplete.

Assumptions

The following assumptions were made during this study:

1. Additional surgeries at MACH will be performed with no additional personnel or equipment. MACH will only perform additional surgeries within current resource constraints. In essence, fixed costs will remain constant.
2. There will be sufficient ward beds available for the additional surgical patients. The Chief Nurse has identified excess bed space and staff available to provide care to the NACH and LACH's surgical patients.
3. Generally, CHAMPUS eligible patients prefer to obtain health care treatment in the military health care system rather than the civilian sector. CHAMPUS eligible patients are familiar and comfortable with the military health care system. Additionally, CHAMPUS eligible patients do not have to pay a deductible in military treatment facilities. This amounts to a savings of \$9.50 per day or \$25 total, whichever is more, for dependents of active duty

members, and 25% of billed charges or \$323 per day, whichever is less, for retirees, their families,* survivors and certain former spouses (U.S. Department of Defense 1994).

4. Some CHAMPUS eligible patients will be willing to drive to Fort Benning to undergo elective surgery, not only to forgo the CHAMPUS deductible, but also due to a variety of other factors such as continuity of care and familiarity with the military health care system. Additionally, many military retirees feel a sense of pride and belonging when they obtain health care in military health care facilities. Depending on the retirees' or family members' employment status, they may not forgo opportunity costs in traveling two hours to obtain medical care.

Ethical Considerations

Confidentiality and right to privacy procedures were strictly adhered to throughout the study. The majority of information was obtained from existing medical information systems and did not have any reference to individual patients. The only exception was reference to patient identification on the ORSOS and Operation Request and Worksheet (DA Form 4107). Patient identification was not used during this study. Consent was not required, as all information was obtained as aggregate figures.

CHAPTER 3

RESULTS AND DISCUSSION

Operating Room Scheduling

MACH uses block scheduling to schedule the utilization of the facility's operating rooms. The block surgery schedule is prepared by the Chief, Department of Surgery after consulting with the Chief, Anesthesiology Service and Chief, Operating Room Nursing Service. The use of an informal committee in determining the block schedule is consistent with Faulconer (1983). The block schedule is reviewed monthly by the Chief, Department of Surgery to ensure that it remains valid and can be supported with current assets.

The block schedule currently used at MACH is included as Appendix A. Procedures are scheduled on Monday, Tuesday, Thursday, and Friday from 0730-1600 (8-1/2 hours), and on Wednesday from 0830-1600 (7-1/2 hours). On Wednesdays, surgery starts one hour later than the rest of the week due to a weekly operating room nursing personnel in-service. Five operating rooms are scheduled from Monday through Thursday, and four are scheduled on Friday. Table 1 shows how the monthly total available operating room minutes were computed. Based upon the monthly twenty day operating room

schedule, 796 hours, or 47,760 minutes, of surgery are available to MACH's Department of Surgery monthly.

The figures in Table 1 do not include the time available for an additional operating room that is used for emergency surgical procedures during normal duty hours. Additionally, there are anesthesia and nursing personnel to staff this emergency operating room so as not to detract from the previously scheduled surgical procedures.

Table 1. Available Operating Room Minutes

Day	Rms	Min	Days	Avail
MON/TUE/THUR	5 X	510 X	12 =	30,600
WED	5 X	450 X	4 =	9,000
FRI	4 X	510 X	4 =	<u>8,160</u>
				47,760

The monthly total of available operating room minutes by service was then computed as shown in Table 2. Note that when added, the total service monthly operating room minutes available corresponds to the 47,760 minutes obtained in Table 1.

Table 2: Available Operating Room Minutes by Service

	Min	Days		Min	Days	Monthly Min Avail
GEN SURG	510 x	12 +		450 x	4 =	7,920
OPHTH	510 x	4 +		450 x	4 =	3,840
ORAL	510 x	8 +			=	4,080
ENT	510 x	8 +			=	4,080
UROL	510 x	8 +			=	4,080
OB/GYN	510 x	12 +		450 x	4 =	7,920
ORTHO	510 x	16 +		450 x	4 =	11,760
POD	510 x	8 +			=	<u>4,080</u>
						47,760

Figure 1 shows the percentage distribution of operating room minutes by service based upon the block schedule. The Orthopedic Service, with 24.6%, had the largest percentage of total operating room minutes allocated, followed by the General Surgery Service and Obstetrics-Gynecology Service, both with 16.6%. The remainder of the services are all allocated between 8.0% and 8.5% of the total operating room minutes.

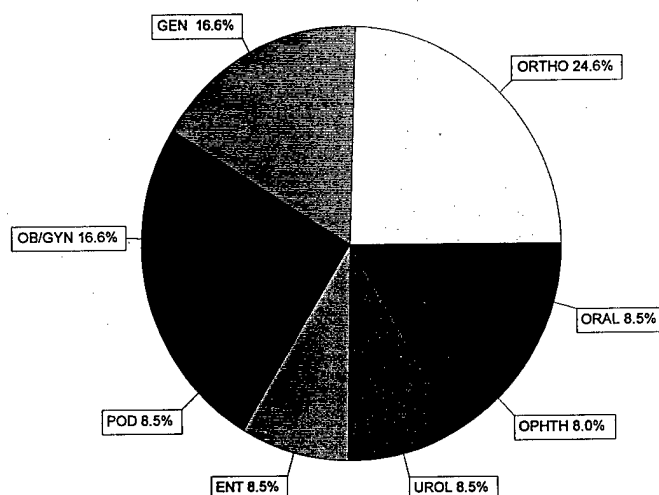


Figure 1. Distribution of Operating Room Minutes by Service

Operating Room Utilization

The total number of operating room procedures performed during FY94 at MACH (see Appendix B) were further broken down to show the total number of operating procedures performed during normal duty hours during the same time frame (see Appendix C). The corresponding operating room minutes for the procedures performed during normal duty during FY94 were also computed (see Appendix D). Note that July had the lowest number of operating room minutes while March had the largest. May and June also had a

fairly low number of operating room minutes. The low number of operating room minutes in May, June, and July is attributable to permanent change of station (PCS) moves during this time frame. The preponderance of PCS moves by physicians occurs in the early summer (Lyons 1994).

Figure 2 shows the percentage distribution of operating room minutes by service based upon utilization during FY94. The Orthopedic Service, with 28.3%, had the highest utilization rate, followed by the General Surgery Service, with 24.4%, Obstetrics-Gynecology Service, with 14.9%, and Podiatry with 11.4%. The remaining services all had below 6% utilization per service. The Orthopedic and General Surgery Services utilized more operating room time as a percentage of the total time allocated than they were allocated. In contrast, all the other services utilized less operating room time as a percentage of the total time allocated than they were allocated. To reflect the scheduling discrepancies, the block surgery schedule should be adjusted by the Chief, Department of Surgery after consulting with the Chief, Anesthesiology Service and Chief, Operating Room Nursing Service.

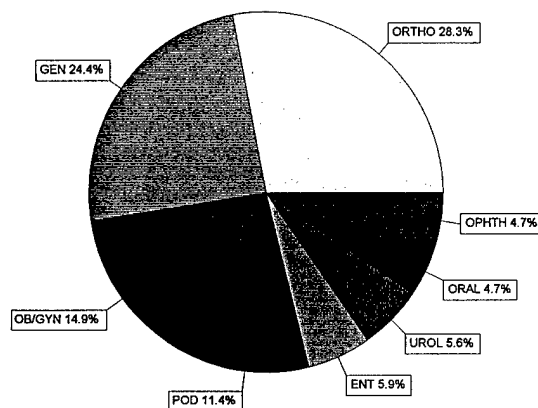


Figure 2. Utilization of Operating Room Minutes by Service

Table 3 shows the operating room procedures, differentiated by service, performed at MACH during FY94. Approximately 11% of the total procedures were emergency procedures performed after normal duty hours. The Obstetrics-Gynecology Service had a disproportionate share, 24%, of after duty hour procedures. This was attributable to the large number of newborns delivered via cesarean section after normal duty hours. All cesarean sections at MACH are performed in the operating room. The top three high volume surgical services, General Surgery Service (n=751), Orthopedic Service (n=746), and Obstetrics-Gynecology Service (n=630) accounted for

over 72% of the total surgical procedures performed at MACH during FY94.

Table 3: MACH FY94 Surgical Procedures

	Duty Hours Procedures	After Hours Procedures	Total Procedures
GEN SURG	680	71	751
OPHTH	149	4	153
ORAL	97	2	99
ENT	149	3	152
UROL	159	6	165
OB/GYN	477	153	630
ORTHO	666	80	746
POD	<u>231</u>	<u>6</u>	<u>237</u>
	2,608	325	2,933

Based upon the information contained in Appendix D, the past historical average of operating room minutes used per service, per month was calculated. This information, as well as the average procedure length by service, is shown in Table 4. Note that the average procedure length is based upon procedures performed during normal duty hours. Emergency surgical procedures performed after normal duty hours were not included in the calculations used to obtain the average procedure length due to the variation of the types of procedures performed after duty hours.

Table 4: MACH FY94 Operating Room Minutes by Service

	Total Proc	Avg Proc Length (Min)	FY94 OR Min	FY94 Avg Monthly OR Min
GEN SURG	680	109	74,120	6,177
OPHTH	149	96	14,304	1,192
ORAL	97	148	14,356	1,196
ENT	149	120	17,880	1,490
UROL	159	107	17,013	1,418
OB/GYN	477	95	45,315	3,776
ORTHO	666	129	85,914	7,160
POD	<u>231</u>	<u>150</u>	<u>34,650</u>	<u>2,887</u>
	2,608	116	303,552	25,296

The Podiatry Service, with 150 minutes, had the highest average procedure length of any surgical service. The Oral Surgery Service, 148 minutes, and Orthopedic Service, 129 minutes, followed closely. The Ophthalmology Service, with 96 minutes, and Obstetrics-Gynecology Service, with 95 minutes, had the shortest average procedure lengths. Figure 3 graphically depicts the average procedure lengths by service that were calculated in Table 4.



Figure 3. Average Operating Room Procedure Length by Service

A standard deviation and variance were calculated for each of the average procedure length means listed in Appendix E. The mean procedure times had significant variation. It is very difficult to schedule MACH's operating room efficiently when the standard deviations in some services, such as General Surgery, are more than 50% of the mean. Standard deviations ranged from 17 minutes for the Ophthalmology Service to 71 minutes for the Ear, Nose, and Throat Service.

Next, the past historical average of operating minutes used per service, per month was compared to the productivity rate of 80% efficiency as suggested by

McQuarrie (1981) and Ide, Kirby, and Starck (1992).

The 80% efficiency rate and number of excess surgery minutes per service, per month are shown in Table 5.

The table also shows the resulting number of MACH's excess procedures available per service. This figure is based upon the average procedure length per service, and does not reflect a potential reallocation of the block surgery schedule by the Chief, Department of Surgery.

Table 5: MACH Excess Surgical Procedures

	Mth Avail OR Min	80% Efficiency	Mth Used OR Min	Mth Excess OR Min	Mth # Excess Proc Avail
GEN SURG	7,920	6,336	6,177	159	1
OPHTH	3,840	3,072	1,192	1,880	19
ORAL	4,080	3,264	1,196	2,068	13
ENT	4,080	3,264	1,490	1,774	14
UROL	4,080	3,264	1,418	1,846	17
OB/GYN	7,920	6,336	3,776	2,560	26
ORTHO	11,760	9,408	7,160	2,248	17
POD	<u>4,080</u>	<u>3,264</u>	<u>2,887</u>	<u>377</u>	<u>2</u>
	47,760	38,208	25,296	12,912	109

Based upon an 80% productivity rate, MACH has over one hundred excess surgical procedures available per month. The quantity of excess procedures ranges from a

low of 1 for the General Surgery Service, to a high of 26 for the Obstetrics-Gynecology Service. The other high volume surgical service, Orthopedic Service, has 17 excess procedures available per month. Figure 4 graphically depicts the excess procedures by service.

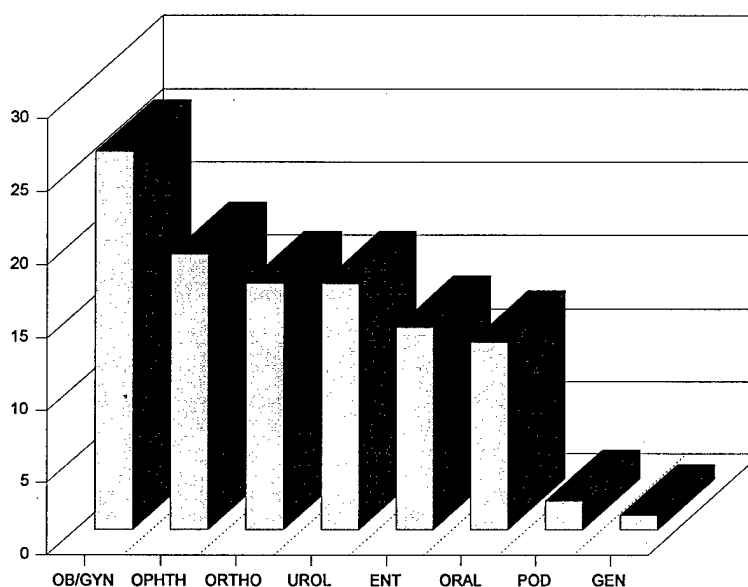


Figure 4. Excess Operating Procedures by Service, Per Month

Figure 5 shows the operating room utilization rate by service. The General Surgery Service, had the greatest operating room utilization rate, 78%, followed closely by the Podiatry Service with 70.8%. The Ophthalmology Service and Oral Surgery Service had the lowest utilization rates with 31% and 29.3%,

respectively. The remaining high volume surgical services, Orthopedic Service and Obstetrics-Gynecology, had utilization rates of 60.1% and 47.7%.

The service operating room utilization rate did not have any affect on patient waiting times for the various surgical services. The General Surgery Service had the shortest elective surgery backlog, three days, followed by the Ophthalmology Service and Oral Surgery Service with one week backlogs. The Orthopedic Service had a two week backlog, while both the Obstetrics-Gynecology Service and Urology Service had three to four week backlogs.

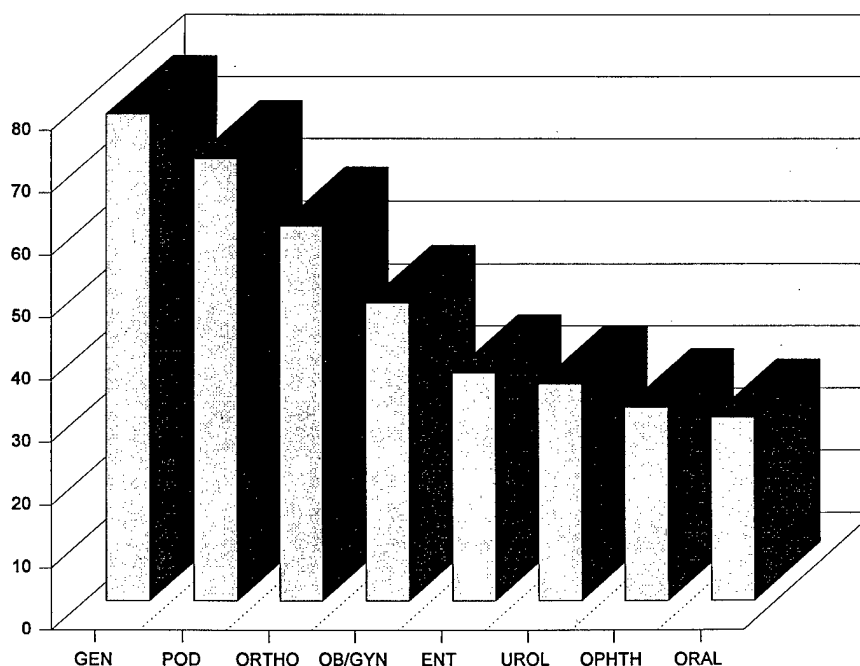


Figure 5. Operating Room Utilization Rate by Service

Description of MACH Procedures

The Chiefs of General Surgery Service, Orthopedic Service, Obstetrics-Gynecology Service, Ophthalmology Service, and Urology Service were presented with the list of surgeries performed at MACH during FY94 (see Appendix F). From this list, the respective surgery service chiefs compiled a list of currently performed elective surgical procedures they felt could be performed in greater volume at MACH.

The list was composed of surgical procedures in general surgery, ophthalmology, urology, gynecology, and orthopedics. It was further broken down by DRG and procedure description. There were 24 general surgery procedures, 7 ophthalmology procedures, 27 urology procedures, 12 gynecology procedures, and 14 orthopedic procedures.

There were not any emergency surgical procedures on the list because it was not considered practical nor medically prudent for patients to travel from either NACH or LACH to MACH for these types of procedures. The list of selected operating room procedures was presented to the command element at NACH and LACH for their analysis in determining the procedures MACH could offer that would be beneficial to their facilities (see Appendix G).

Description of LACH and NACH Procedures

The quantity of FY94 Supplemental Care procedures for the surgical procedures shown in Appendix G was obtained for NACH and LACH. NACH did not have any Supplemental Care for procedures listed in Appendix G during FY94. LACH had only two procedures: one DRG 361, Laparoscopy and Incisional Tubal Interruption (OB/GYN Service), and one DRG 493, Laproscopic Cholecystectomy W/O C.D.E. with CC (General Surgery Service). NACH and LACH had sent the majority of their Supplemental Care patients needing elective surgical procedures to either Eisenhower Army Medical Center, Augusta, Georgia, or Keesler Air Force Base Medical Center, Biloxi, Mississippi (Goddard 1994) (Leggett 1994).

The number of FY94 CHAMPUS procedures for the surgical procedures shown in Appendix G for LACH and NACH was obtained from the Patient Administration Systems and Biostatistics Activity (PASBA) (see Appendices H and I). PASBA obtained the relevant data from the Medical Analysis Support System (MASS). The procedures shown in Appendices H and I were performed during FY94 in LACH's and NACH's forty mile catchment areas, respectively. It was necessary to use PASBA as the conduit for this information because MACH personnel could not obtain information concerning LACH and NACH

from MASS.

During FY94, NACH had \$110,787 in CHAMPUS costs for the procedures shown in Appendix G. This consisted of 29 procedures in 18 DRGs. The majority were urology procedures; there were no ophthalmology procedures. During the same period, LACH had \$256,915 in CHAMPUS costs for the procedures shown in Appendix G. This consisted of 76 procedures in 25 DRGs. They consisted of 49 gynecology procedures, 13 general surgery procedures, 12 urology procedures, and 1 ophthalmology procedure. In essence, very few of NACH's and LACH's CHAMPUS surgery patients are sent to other military medical treatment facilities for surgery (Goddard 1994) (Leggett 1994).

Table 6 shows the surgical procedures, listed by DRG, that the NACH and LACH command groups were interested in obtaining from MACH during FY95. Based upon current demand, NACH desired a total of nine surgical procedures, the majority of which were gynecology and urology cases. LACH's current demand was greater, as their command group indicated they wanted to send 26 surgical procedures to MACH. These procedures were predominately gynecology cases. The large number of gynecology and urology procedure requests can be attributed to the fact that neither NACH or LACH have a gynecologist nor urologist on staff

(Goddard 1994) (Leggett 1994).

Table 6: Surgical Procedures Desired
by LACH & NACH

Service	DRG	LACH	NACH
GEN SURG	148	1	0
OB/GYN	356	3	0
	358	7	1
	359	12	2
ORTHO	219	0	1
UROL	311	0	1
	316	1	0
	323	1	2
	334	1	0
	337	0	1
	339	<u>0</u>	<u>1</u>
Total		26	9

Table 7 shows a comparison of MACH's projected excess surgical procedures by service for FY95 to the list of procedures desired by LACH and NACH. MACH's projected excess surgical procedures were calculated by multiplying the monthly totals obtained in Table 5 by twelve to obtain the projected annual total of excess surgical procedures. MACH's figures do not reflect a potential adjustment of the block surgery schedule by the Chief, Department of Surgery.

In all five services, MACH had more than enough available projected excess surgical procedures to support LACH and NACH's desires.

Table 7: Available/Desired Surgical Procedure Analysis

Service	Projected Excess Proc Avail	LACH/NACH Desired Proc	Excess Capacity
GEN SURG	12	1	11
OPHTH	228	0	228
UROL	204	8	196
OB/GYN	312	25	287
ORTHO	204	1	203

Operating Room Procedure Costs

For the purposes of this study, the cost of providing an additional surgical procedure by service is shown in Table 8. Based on the Deputy Commander for Administration's guidance, the figures only take into account the supply costs obtained from MEPRS. They do not include other overhead, such as nursing costs, utilities, and building/equipment depreciation.

The Orthopedic Service had the largest FY94 surgical supply costs at MACH, as well as the largest average supply costs per procedure. The other high volume surgical services, General Surgery Service and Obstetrics-Gynecology

Service, had the next largest surgical supply costs for FY94, but relatively low average supply costs per procedure. The large average supply costs per procedure for the Orthopedic and Podiatry Services can be attributed to the high cost of orthopedic hardware involved in those services (Murphy 1994). The majority of the services desired by NACH and LACH, Obstetrics-Gynecology and Urology, had relatively low average supply costs per procedure.

Table 8: MACH Surgical Supply Costs by Service

	FY 94 Surgical Supply Costs	FY94 Proc	Avg Supply Cost/Proc
GEN SURG	\$222,548	751	\$296
OPHTH	\$46,634	153	\$305
ORAL	\$34,172	99	\$345
ENT	\$44,270	152	\$291
UROL	\$53,205	165	\$322
OB/GYN	\$164,071	630	\$260
ORTHO	\$318,849	746	\$427
POD	<u>\$96,276</u>	<u>237</u>	<u>\$406</u>
	\$980,025	2,933	\$334

Figure 6 graphically depicts the average supply costs by service that are shown in Table 8.

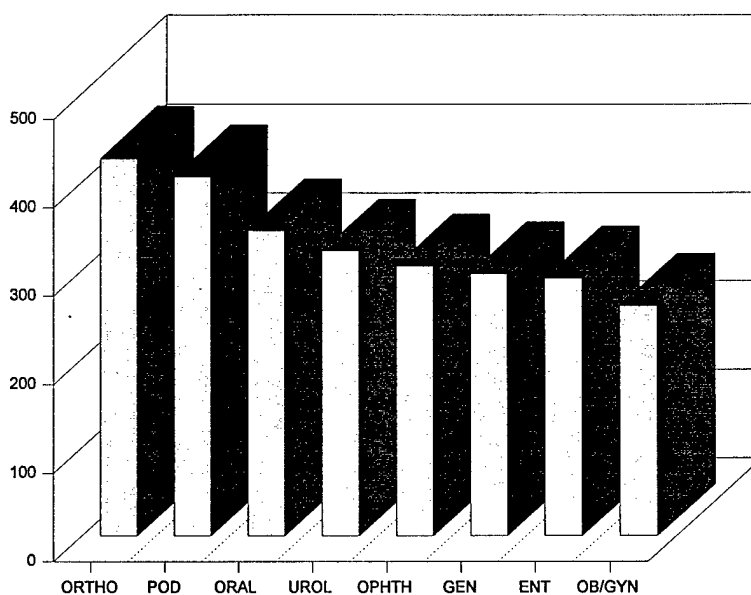


Figure 6. Operating Room Supply Costs by Service

Travel Costs

Table 9 portrays the travel costs associated with traveling to and from NACH and LACH. The mileage figures were obtained from the Department of Defense Joint Travel Regulation (JTR). The mileage reimbursement rate of thirty cents per mile reflects the 1995 rates. Per diem costs were not included as patients traveling from NACH or LACH to MACH for inpatient surgical procedures would not be authorized per diem.

Table 9: Travel Costs

	Miles (Roundtrip)	Reimbursement Rate	Travel Cost
Ft McClellan	304	\$0.30	\$91.20
Ft Rucker	268	\$0.30	\$80.40

Cost Analysis

The average supply costs per procedure, per service calculated in Table 8 were added to the travel costs calculated in Table 9 to determine MACH's costs of providing the surgical procedures desired by LACH. In Table 10, these figures are compared to FY94 CHAMPUS costs incurred in LACH's catchment area. Performing the twenty-six surgical procedures at MACH would save the military \$94,920, which equates to an average of \$3,650 per procedure.

Table 10: LACH Cost Analysis

Service	DRG	Desired #	FY94 CHAMPUS Costs	MACH Cost*	Savings
GEN SURG	148	1	\$9,383	\$377	\$9,006
OB/GYN	356	3	\$9,345	\$1,023	\$8,322
	358	7	\$28,238	\$2,387	\$25,851
	359	12	\$44,076	\$4,092	\$39,984
UROL	316	1	\$3,962	\$403	\$3,559
	323	1	\$2,124	\$403	\$1,721
	334	1	\$6,880	\$403	\$6,477
TOTAL		26	\$104,008	\$9,088	\$94,920

* Includes supply costs and travel costs

Table 11 shows the cost of MACH providing the surgical procedures desired by NACH. These figures are compared to FY94 CHAMPUS costs incurred in NACH's catchment area. Performing the nine surgical procedures would save the military \$23,647, or an average of \$2,627 per procedure.

Table 11: NACH Cost Analysis

Service	DRG	Desired #	FY94 CHAMPUS Costs	MACH Cost*	Savings
OB/GYN	358	1	\$4,549	\$351	\$4,198
	359	2	\$7,924	\$702	\$7,222
ORTHO	219	1	\$4,014	\$518	\$3,496
UROL	311	1	\$2,843	\$413	\$2,430
	323	2	\$3,734	\$826	\$2,908
	337	1	\$2,327	\$413	\$1,914
	339	<u>1</u>	<u>\$1,892</u>	<u>\$413</u>	<u>\$1,479</u>
		9	\$27,283	\$3,636	\$23,647

* Includes supply costs and travel costs

MACH could potentially save the military system over \$118,000 by performing the thirty-five surgical procedures identified by NACH and LACH. This equates to a savings of nearly \$3,400 per surgical procedure over CHAMPUS expenditures. The identified costs savings do not include the CHAMPUS copayments that military health care beneficiaries would otherwise incur, nor do they reflect the opportunity costs incurred by the patient in traveling to MACH for surgery.

The CHAMPUS savings would most likely be realized through the compilation of a business plan by the Resource Management Divisions at MACH, NACH, and LACH. The business plan would be used as a basis to formulate a CHAMPUS Recapture Initiative (CRI) which enables transfer of funds to MACH (Allen 1995).

MACH would submit the CRI to the Southeast Health Service Support Area (HSSA) requesting CHAMPUS funds be transferred from NACH and LACH to MACH. NACH and LACH would then provide enclosures to the CRI outlining their CHAMPUS costs for the surgical procedures that would be performed at MACH. NACH and LACH would also be required to provide a statement of acknowledgement that their Resource Summary CHAMPUS dollars will be decremented and transferred to MACH to pay for the workload performed at MACH (Proctor 1995).

A savings of \$15,650 could be realized by performing the two Supplemental Care surgical procedures at MACH (MASS). Transfer of funds for Supplemental Care patients would be accomplished via Military Interdepartmental Purchase Request, a method used to transfer funds between Department of Defense facilities (Allen 1995).

Limitations

A few of the limitations of this study involve costs. As stated earlier, CHAMPUS claims may be filed until the close of the calendar year following the medical treatment. Thus, the data for FY94 CHAMPUS surgical procedures used in this study may not be complete.

It is very difficult to compare MEPRS and CHAMPUS data as they are not measured in the same manner. Additionally, MEPRS does not allow the costs of individual surgical procedures to be determined. It is still unknown whether

this information will be retrievable when the Defense Medical Human Resource System and the Composite Health Care System are fully operational.

The purpose of this study was to ascertain whether it would be cost beneficial for Martin Army Community Hospital to sell excess surgical services to Noble Army Community Hospital and Lyster Army Community Hospital. As such, the study did not include a patient survey to determine patient preferences and desires involved in traveling to Fort Benning for elective surgery.

CHAPTER 4

CONCLUSIONS AND RECOMMENDATIONS

Martin Army Community Hospital can economically expand the utilization of its excess surgical resources. This study has shown that it would be cost beneficial for Martin Army Community Hospital to sell excess surgical services to Noble Army Community Hospital, Fort McClellan, Alabama, and Lyster Army Community Hospital, Fort Rucker, Alabama.

Utilizing MACH's full capacity operating room productivity rate of 80% and available surgeons and ancillary surgery personnel, the five surgery services analyzed have the capability to perform over 80 additional surgeries per month. The Oral Surgery Service, Otorhinolaryngology Service, and the Podiatry Service have additional operating room time available, but do not have the necessary surgeons to perform additional surgery.

Both NACH and LACH have expressed the desire to obtain specified surgical procedures from MACH. NACH has identified nine surgical procedures to be obtained from MACH during FY95, the majority of which fall under the purview of the Gynecology and Urology Services. Likewise, LACH has identified twenty-six procedures, the majority gynecology related. MACH has the ability to perform all the surgical

procedures desired by both NACH and LACH.

Based upon the variable costs incurred by MACH to perform the additional surgical procedures, the military could save over \$118,00 in CHAMPUS costs. This equates to a savings of nearly \$3,400 per surgical procedure. These savings do not reflect the CHAMPUS copayments that are normally incurred by beneficiaries.

A follow on study should include a patient satisfaction and desires survey to see if NACH and LACH patients, both active duty and CHAMPUS eligible beneficiaries, are willing to make the sojourn to MACH to obtain needed inpatient and possible outpatient procedures. Additionally, this study could further be expanded into the outpatient arena.

The methodology used in this study could be further used to analyze the surgical needs and desires of the health clinic at Fort McPherson, Georgia. Fort McPherson currently sends surgical referrals to Eisenhower Army Medical Center in Augusta, Georgia. It has surfaced in Southeast Health Service Support Area meetings that some patients from the Fort McPherson Health Clinic would rather travel for surgical procedures to MACH than EAMC.

If either Fort McClellan or Fort Rucker is recommended by the 1995 Base Realignment and Closure Commission (BRAC) as installations that will close or downsize, this study should be appropriately modified and performed again. This study should also be repeated if either NACH or LACH are

downgraded from hospital to clinic status.

Recommend the operating room obtain or develop a new computer information system to meet the needs of the hospital. The proposed system should be capable of providing regular and ad hoc reports necessary to effectively and efficiently manage operating room utilization. This would prove very beneficial to the hospital Executive Committee as well as the Chief, Department of Surgery, Chief, Anesthesiology Service, and Chief, Operating Room Nursing Service.

The Chief, Department of Surgery, should use the data obtained in this study to further analyze the allocation of operating room time per various surgical service. Potential surgery efficiency issues should also be examined, such as the high average procedure lengths and high average supply costs per procedure for the Podiatry and Oral Surgery Services.

Appendix A

Operating Room Schedule

	<u>MONDAY</u> (5 Rms/8.5 Hrs)	<u>TUESDAY</u> (5 Rms/8.5 Hrs)	<u>WEDNESDAY</u> (5 Rms/7.5 Hrs)	<u>THURSDAY</u> (5 Rms/8.5 Hrs)	<u>FRIDAY</u> (4 Rms/8.5 Hrs)
GENERAL SURGERY	GENERAL SURGERY	GENERAL SURGERY	GENERAL SURGERY	ORTHOPEDICS	GENERAL SURGERY
ORTHOPEDICS	ORTHOPEDICS	ORTHOPEDICS	ORTHOPEDICS (2)	ORAL SURGERY	ORTHOPEDICS
OB/GYN	ORAL SURGERY	OPHTHOMOLOGY	ENT	UROLOGY	OPHTHOMOLOGY
ENT	OB/GYN	OB/GYN	OB/GYN	OB/GYN	OB/GYN
UROLOGY	PODIATRY	PODIATRY		PODIATRY	

SERVICE

Appendix B

MACH FY94 OR Procedures

	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>	<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>	<u>MAY</u>	<u>JUN</u>	<u>JUL</u>	<u>AUG</u>	<u>SEP</u>	<u>TOTAL</u>
SURG	59	57	53	66	78	83	61	57	63	49	72	53	751
OPHTH	8	10	11	13	12	15	14	16	10	5	16	23	153
ORAL	8	3	2	6	14	9	4	10	15	10	12	6	99
ENT	5	6	16	13	18	25	20	12	0	0	23	14	152
UROL	18	12	16	17	11	16	4	10	13	18	15	15	165
OB/GYN	64	44	51	48	59	58	66	42	33	39	71	55	630
ORTHO	76	61	47	69	66	80	60	67	51	53	58	58	746
POD	<u>13</u>	<u>2</u>	<u>0</u>	<u>19</u>	<u>21</u>	<u>28</u>	<u>25</u>	<u>12</u>	<u>33</u>	<u>24</u>	<u>27</u>	<u>23</u>	<u>237</u>
	251	205	196	251	279	314	254	226	218	198	294	247	2,933

Appendix C

MACH FY94 OR Procedures During Duty Hours

	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>	<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>	<u>MAY</u>	<u>JUN</u>	<u>JUL</u>	<u>AUG</u>	<u>SEP</u>	<u>TOTAL</u>
SURG	55	51	47	65	70	78	54	53	50	44	64	49	680
OPHTH	7	10	11	13	12	15	14	15	10	5	16	21	149
ORAL	8	3	2	6	14	8	4	10	15	9	12	6	97
ENT	5	6	15	13	18	24	20	12	0	0	23	13	149
UROL	18	12	16	17	10	15	4	9	13	16	14	15	159
OB/GYN	49	37	41	39	49	50	46	30	24	27	48	37	477
ORTHO	68	55	44	63	60	69	53	61	44	48	50	51	666
POD	<u>13</u>	<u>11</u>	<u>0</u>	<u>19</u>	<u>21</u>	<u>28</u>	<u>24</u>	<u>12</u>	<u>33</u>	<u>23</u>	<u>25</u>	<u>22</u>	<u>231</u>
	223	185	176	235	254	287	219	204	189	172	252	214	2,608

Appendix D

MACH FY94 OR Minutes

	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>	<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>	<u>MAY</u>	<u>JUN</u>	<u>JUL</u>	<u>AUG</u>	<u>SEP</u>	<u>TOTAL</u>
SURG	6,431	6,213	5,777	7,194	8,502	9,047	6,649	6,213	6,867	5,341	7,848	5,777	81,859
OPHTH	768	960	1,056	1,248	1,152	1,440	1,344	1,536	960	480	1,536	2,208	14,688
ORAL	1,184	444	296	888	2,072	1,332	592	1,480	2,220	1,480	1,776	888	14,652
ENT	600	720	1,920	1,560	2,160	3,000	2,400	1,440	0	0	2,760	1,680	18,240
UROL	1,926	1,284	1,712	1,819	1,177	1,712	428	1,070	1,391	1,926	1,605	1,605	17,655
OB/GYN	6,080	4,180	4,845	4,560	3,835	5,510	6,270	3,990	3,135	3,705	6,745	5,225	59,850
ORTHO	9,804	7,869	6,063	8,901	8,514	10,320	7,740	8,643	6,579	6,837	7,482	7,482	96,234
POD	<u>1,950</u>	<u>1,800</u>	<u>0</u>	<u>2,850</u>	<u>3,150</u>	<u>4,200</u>	<u>3,750</u>	<u>1,800</u>	<u>4,950</u>	<u>3,600</u>	<u>4,050</u>	<u>3,450</u>	<u>35,550</u>
	28,865	23,575	22,540	28,865	32,095	36,110	29,210	25,990	25,070	22,770	33,710	28,405	338,728

Appendix E
Operating Room Variance Report

<u>SERVICE</u>	<u>PROC</u>	<u>MEAN</u>	<u>VARIANCE</u>	<u>STD DEV</u>
GEN SURG	751	108.80	3,164.06	56.25
OPHTH	153	95.32	289.98	17.32
ORAL	99	147.31	4,191.27	64.74
ENT	152	119.11	5,143.76	71.72
UROL	165	107.02	2,806.88	52.98
OB/GYN	630	94.67	1,756.45	41.91
ORTHO	746	128.95	2,816.42	53.07
POD	237	150.08	1,360.13	36.88

Appendix F

MACH FY94 OR Procedures by Type

GENERAL SURGERY SERVICE

DRG PROCEDURE

001	CRANIOTOMY AGE>17 EXCEPT FOR TRAUMA
009	SPINAL DISORDERS & INJURIES
025	SEIZURE & HEADACHE AGE>17W/O CC
027	TRAUMATIC STUPOR & COMA, COMA>1 HR
028	TRAUMATIC STUPOR & COMA, COMA (1 HR) AGE>17 WITH CC
029	TRAUMATIC STUPOR & COMA, COMA (1 HR) AGE>17 W/O CC
032	CONCUSSION AGE>17 W.O CC
035	OTHER DISORDERS OF NERVOUS SYSTEM W/O CC
047	OTHER DISORDERS OF THE EYE AGE>17 W/O CC
062	MYRINGOTOMY WITH TUBE INSERTION AGE 0-17
063	OTHER EAR, NOSE, MOUTH & THROAT O.R. PROCEDURES
072	NASAL TRAUMA & DEFORMITY
079	RESPIRATORY INFECTIONS & INFLAMMATIONS AGE>17 WITH CC
084	MAJOR CHEST TRAUMA W.O CC
085	PLEURAL EFFUSION WITH CC
092	INTERSTITIAL LUNG DISEASE WITH CCC
094	PNEUMOTHORAX WITH CC
095	PNEUMOTHORAX W/O CC
101	OTHER RESPIRATORY SYSTEM DIAGNOSES WITH CC
119	VEIN LIGATION & STRIPPING
131	PERIPHERAL VASCULAR DISORDERS W/O CC
146	RECTAL RESECTION WITH CC
148	MAJOR SMALL & LARGE BOWEL PROCEDURES WITH CC
149	MAJOR SMALL & LARGE BOWEL PROCEDURES W/O CC
150	PERITONEAL ADHESIOLYSIS WITH CC
151	PERITONEAL ADHESIOLYSIS W/OCC
153	MINOR SMALL & LARGE BOWEL PROCEDURES W/O CC
154	STOMACH, ESOPHAGEAL & DUODENAL PROC AGE>17 W CC
155	STOMACH, ESOPHAGEAL & DUODENAL PROC AGE>17 W/O CC
157	ANAL AND STOMAL PROCEDURES WITH CC
158	ANAL AND STOMAL PROCEDURES W/O CC
159	HERNIA PROC EXCEPT INGUINAL & FEMORAL AGE>17 WITH CC
160	HERNIA PROC EXCEPT INGUINAL & FEMORAL AGE>17 W/O CC
161	INGUINAL & FEMORAL HERNIA PROC AGE>17 WITH CC
162	INGUINAL & FEMORAL HERNIA PROC AGE>17 W/O CC
164	APPENDECTOMY W COMPLICATED PRINCIPAL DIAG WITH CC
165	APPENDECTOMY W COMPLICATED PRINCIPAL DIAG W/O CC
167	APPENDECTOMY W/O COMPLICATED PRINICPAL DIAG W/O CC

DRG PROCEDURE

170 OTHER DIGESTIVE SYSTEM OR PROC WITH CC
 171 OTHER DIGESTIVE SYSTEM OR PROC W/O CC
 172 DIGESTIVE MALIGNANCY WITH CC
 173 DIGESTIVE MALIGNANCY W/O CC
 175 GI HEMORRHAGE W/O CC
 178 UNCOMPLICATED PEPTIC ULCER W/O CC
 179 INFLAMMATORY BOWEL DISEASE
 180 GI OBSTRUCTION WITH CC
 181 GI OBSTRUCTION W/O CC
 182 ESOPHAGITIS, GASTRO & MISC DIGEST DISORD AGE>17 W CC
 183 ESOPHAGITIS, GASTRO & MISC DIGEST DISORD AGE>17 W/O CC
 184 ESOPHAGITIS, GASTRO & MISC DIGEST DISORDERS AGE 0-17
 185 DENTAL & ORAL DIS EXCEPT EXTRACTIONS & RESTOR, AGE>17
 188 OTHER DIGESTIVE SYSTEM DIAG AGE>17 WITH CC
 189 OTHER DIGESTIVE SYSTEM DIAG AGE>17 W/O CC
 191 PANCREAS, LIVER & SHUNT PROCEDURES WITH
 193 BILIARY TRACT PROC W CC EXC ONLY CHOLECYST
 197 CHOLECYSTECTOMY W/O C.D.E. WITH CC
 198 CHOLECYSTECTOMY W/O C.D.E. W/O CC
 203 MALIGNANCY OF HEPATOBILIARY SYSTEM OR PANCREAS
 205 DISORDERS OF LIVER EXC MALIG, CIRRH, ALC HEPA WITH CC
 207 DISORDERS OF BILIARY TRACT WITH CC
 208 DISORDERS OF BILIARY TRACT W/O CC
 222 KNEE PROC W/O CC
 239 PATH FRACTURES & MUSCULOSKELETAL & CONN TISS MALIG
 243 MEDICAL BACK PROBLEMS
 249 AFTERCARE, MUSCULOSKELETAL SYSTEM & CONN TISS
 251 FX, SPRN, SFRN, & DISL OF FOREARM, HAND, FOOT AGE>17
 254 FX, SPRN, SFRN, & DISL OF UPARM, LOWLEG EXC FOOT
 256 OTHER MUSCULO SYSTEM & CONNECTIVE TISSUE DIAGNOSES
 257 TOTAL MASTECTOMY FOR MALIGNANCY WITH CC
 258 TOTAL MASTECTOMY FOR MALIGNANCY W/O CC
 259 SUBTOTAL MASTECTOMY FOR MALIGNANCY WITH CC
 260 SUBTOTAL MASTECTOMY FOR MALIGNANCY W/O CC
 261 BREAST PROC FOR NON-MAL EXC BIOPSY & LOCAL EXCISION
 262 BREAST BIOPSY & LOCAL EXCISION FOR NON-MAL
 264 SKIN GRAFT &/OR DEBRID FOR SKIN ULCER OR CELLULITIS
 265 SKIN GRAFT &/OR DEBRID EXC FOR SKIN ULCER OR CELL
 266 SKIN GRAFT &/OR DEBRID EXC FOR SKIN ULCER OR CELL CC
 267 PERIANAL & PILONICAL PROCEDURES
 269 OTHER SKIN, SUBCUT TISS & BREAST PROC WITH CC
 270 OTHER SKIN, SUBCUT TISS & BREAST PROC W/O CC
 275 MALIGNANT BREAST DISORDERS W/O CC
 276 NON-MALIGNANT BREAST DISORDERS
 277 CELLULITIS AGE>17 WITH CC
 278 CELLULITIS AGE>17 W/O CC
 280 TRAUMA TO THE SKIN, SUBCUT TISS & BREAST AGE>17 W CC
 281 TRAUMA TO THE SKIN, SUBCUT TISS & BREAST AGE>17 W/O CC
 284 MINOR SKIN DISORDERS W/O CC
 286 ADRENAL & PITUITARY PROCEDURES

DRG PROCEDURE

290 THYROID PROCEDURES
 300 ENDOCRINE DISORDERS WITH CC
 315 OTHER KIDNEY & URINARY TRACT OR PROC
 321 KIDNEY & URINARY TRACT INFECTIONS AGE>17 W/O CC
 331 OTHER KIDNEY & URINARY TRACT DIAGNOSES AGE >17 WITH CC
 339 TESTES PROC,M NON-MALIG AGE>17
 350 INFLAMMATION OF THE MALE REPRODUCTIVE SYSTEM
 361 LAPAROSCOPY & INCISIONAL TUBAL INTERRUPTION
 364 D&C, CONIZATION EXC FOR MALIGNANCY
 366 MALIGNANCY, FEMALE REPORODUCTIVE SYSTEM WITH CC
 369 MENSTRUAL & OTHER FEMALE REPRODUCTVE SYSTEM DISORDERS
 392 SPLENECTOMY AGE>17
 394 OTHER OR PROC OF THE BLOOD & BLOOD FORMING ORGANS
 395 RED BLOD CELL DISORDERS AGE>17
 399 RETICULDENDOTHELIAL & IMMUNITY DISORDERS W/O CC
 400 LYMPHOMA & LEUKEMIA WITH MAJOR OR PROC
 401 LYMPHOMA & NONACUTE LEUKEMIA WITH OTHER OR PROC WITH CC
 402 LYMPHOMA & NONACUTE LEUKEMIA W OTHER OR PROC W/O CC
 404 LYMPHOMA & NONACUTE LEUKEMIA W/O CC
 406 HYELOPROLIF DISORD OR POORLY DIFF NEOP
 410 CHEMOTHERAPY W/O ACUTE LEUKEMIA AS SECONDARY DIAG
 412 HISTORY OF MALIGNANCY WITH ENDOSCOPY
 415 OR PROC FOR INFECTIOUS & PARASITIC DISEASES
 418 POSTOPERATIVE 7 POST TRAUMATIC INFECTIONS
 421 VIRAL ILLNESS AGE>17
 423 OTHER INFECTIOUS & PARASITIC DISEASES DIAG
 424 OR PROC WITH PRINCIPAL DIAG OF MENTAL ILLNESS
 427 NEUROSES EXC DEPRESSIVE
 430 PSYCHOSES
 440 WOUND DEBRIDEMENTS FOR INJURIES
 443 OTHER OR PROC FOR INJUR W/O CC
 444 TRAUMATIC INJURY AGE>17 W CC
 445 TRAUMATIC INJURY AGE>17 W/O CC
 449 POISONING AND TOXI EFFECTS OF DRUGS AGE>17 W CC
 452 COMPLICATIONS OF TREATMENT W CC
 453 COMPLICATIONS OF TREATMENT W/O CC
 454 OTHER INJURY, POISONING & TOXIC EFF DIAG W CC
 455 OTHER INJURY, POISONING & TOXIC EFF DIAG W/O CC
 456 BURNS, TRANSFERRED TO ANOTHER ACUTE CARE FACILITY
 458 NONEXTENSIVE BURNS WITH SKIN GRAFTS
 460 NONEXTENSIVE BURNS W/O OR PROC
 461 OR PROC W DIAG OF OTHER CONTACT WITH HEALTH SERVICES
 466 AFTERCARE W/O HISTORY OF MALIGNANCY AS SECONDARY DIAG
 467 OTHER FACTORS INFLUENCING HEALHT STATUS
 468 EXTENSIVE OR PROC UNRELATED TO PRINCI DIAG
 470 UNGROUPABLE
 477 NONEXTENSIVE OR PROCEDURE UNRELATED TO PRIN DIAG
 487 OTHER MULITPLE SIGN TRAUMA
 493 LAPROSCOPIC CHOLO W/O CDE W CC
 494 LAPROSCOPIC CHOLO W/O CDE W/O CC

DRG PROCEDURE

 901 ALC/DRUG ABU/DEPND, DETOX/OTH SYM TREAT AGE >21

OPHTHALMOLOGY SERVICE

DRG PROCEDURE

 008 PERIPH & CRANIAL NERVE & OTH NERV SYST PROC W/O CC
 020 NERVOUS SYSTEM INFECTION EXC VIRAL MENINGITIS
 037 ORBITAL PROC
 039 LENS PROC WITH OR WITHOUT VITRECTOMY
 040 EXTRAOCULAR PROC EXC ORBIT AGE>17
 041 EXTRAOCULAR PROC EXC ORBIT AGE 0-17
 042 INTRAOCULAR PROC EXC RETINA, IRIS & LENS
 043 HYPHEMA
 046 OTH DISORDERS OF THE EYE AGE>17 W CC
 047 OTH DISORDERS OF THE EYE AGE>17 W/O CC
 048 OTH DISORDERS OF THE EYE AGE 0-17
 063 OTH EAR, NOSE, MOUTH & THROAT OR PROC
 074 OTH EAR, NOSE, MOUTH & THROAT DIAG AGE 0-17
 268 SKIN, SUBCUTANEOUS TISSUE 7 BREAST PLASTIC PROC
 270 OTH SKIN, SUBCUT TISS & BREAST PRO W/O CC
 294 DIABETES AGE>35
 442 OTH OR PROC FOR INJ WITH CC
 453 COMPLICATIONS OF TREATMENT W/O CC
 466 AFTERCARE W/O HISTORY OF MALIG AS SECONDARY DIAG

UROLOGY SERVICE

DRG PROCEDURE

 013 MULTIPLE SCLEROSIS & CEREBELLAR ATAXIA
 025 SEIZURE & HEADACHE AGE>17 W/O CC
 111 MAJOR CARDIOVASCULAR PROC W/O CC
 163 HERNIA PROCEDURES AGE 0-17
 182 ESOPHAGITIS, GASTROENT, & MISC DIGES DISORD AGE>17 CC
 183 ESOPHAGITIS, GASTROENT, & MISC DIGES DISORD AGE>17 W/O
 239 PATHOLOGICAL FRACTURES 7 MUSC & CONN TISS MALIGNANCY
 270 OTH SKIN, SUBCUT TIS & BREAST PROC W/O CC
 303 KIDNEY, URTER & MAJOR BLADDER PROC FOR NEOPLASM
 305 KIDNEY, URETER & MAJ BLADER PROC FOR NON-NEOPL W/O CC
 306 PROSTATECTOMY WITH CC
 307 PROSTATECTOMY W/O CC
 308 MINOR BLADDER PROC WITH CC
 309 MINOR BLADDER PROC W/O CC
 310 TRANSURETHRAL PROC W CC
 311 TRANSURETHRAL PROC W/O CC
 313 URETHRAL PROC AGE>17 W/O CC
 314 URETHRAL PROC AGE 0-17

DRG PROCEDURE

316 RENAL FAILURE
320 KIDNEY & URINARY TRACT INF AGE>17 WITH CC
321 KIDNEY & URINARY TRACT INF AGE>17 W/O CC
322 KIDNEY & URINARY TRACT INF AGE 0-17
323 URINARY STONES WITH CC AND/OR ESW LITHOTRIPSY
324 URINARY TONES W/O CC
326 KIDNEY & URINARY TRACT SIGNS & SYMP AGE>17 W/O CC
327 KIDNEY & URINARY TRACT SIGNS & SYMP AGE 0-17
328 URETHRAL STRICTURE AGE>17 WITH CC
329 URETHRAL STRICTURE AGE >17 W/O CC
331 OTHER KIDNEY & URINARY TRACT DIAG AGE>17 WITH CC
332 OTHER KIDNEY & URINARY TRACT DIAG AGE>17 W/O CC
333 OTHER KIDNEY & URINARY TRACT DIAG 0-17
334 MAJOR HMALE PELVIC PROC WITH CC
335 MAJOR MALE PELVIC PROC W/O CC
336 TRANSURETHRAL PROSTATECTOMY WITH CC
337 TRANSURETHRAL PROSTATECTOMY W/O CC
339 TESTES PROC, NON-MALIG AGE>17
340 TESTES PROC, NON-MALIG AGE 0-17
341 PENIS PROC
342 CIRCUMCISION AGE>17
343 CIRCUMCISION AGE 0-17
344 OTHER MALE REPRODUCTIVE SYS OR PROC FOR MALIG
345 OTH MALE REPRO SYS OR PROC EXCEPT FOR MALIG
346 MALIGNANCY, MALE REPRODUCTIVE SYS W CC
347 MALIGNANCY, MALE REPRODUCTIVE SYS W/O CC
350 INFLAMMATION OF THE MALE REPRODUCTIVE SYSTEM
351 STERILIZATION, MALE
352 OTH MALE REPRODUCTIVE SYSTEM DIAGNOSES
356 FEMALE REPRO SYS RECONSTRUCTIVE PROC
360 VAGINA, CERVIX & VULVA PROC
365 OTH FEMALE REPROD SYS OR PROC
369 MENSTRUAL & OTH FEMALE REPRO SYS DISORDERS
397 COAGULATION DISORDERS
408 HYELOPROLIF DISORD OR POORLY DIFF NEPL W OR PROC
423 OTH INFECTIOUS & PARASITIC DISEASES DIAGNOSES
443 OTH OR PROC FOR INJUREIS W/O CC
452 COMPLICATIONS OF TREATMENT WITH CC
453 COMPLICATIONS OF TREATMENT W/O CC
461 OR PROC W DIAG OF OTH CONTACT WITH HEALTH SERVICES
463 AFTERCARE W HISTORY OF MALIG AS SECONDARY DIAGNOSIS
466 AFTERCARE W/O HISTORY OF MALIG AS SECONDARY DIAGNOSIS
467 OTH FACTORS INFLUENCING HEALTH STATUS
477 NON=EXTENSIVE OR PROC UNRELATED TO PRINC DIAG

GYNECOLOGY SERVICE

DRG PROCEDURE

130	PERIPHERAL VASCULAR DISORDERS WITH CC
131	PERIPHERAL VASCULAR DISORDERS W/O CC
149	MAJOR SMALL & LARGE BOWEL PROC W/O CC
151	PERITONEAL ADHESIOLYSTS W/O CC
171	OTH DIGESTIVE SYS OR PROC W/O CC
182	ESOPHAGITIS, GASTROENT & MISC DIGEST DISORD AGE>17 CC
183	ESOPHAGITIS, GASTROENT & MISC DIGEST DISORD AGE>17
188	OTH DIGESTIVE SYS DIAG AGE>17 W CC
267	PERIANAL & PILONICAL PROC
269	OTH SKIN, SUBCUT TISS & BREAST PROC W CC
332	OTH KIDNEY & URINARY TRACT DIAG AGE>17 W/O CC
354	UTERINE, ADNEXA PROC FOR NON-OVAR/ADNEX MALIG WITH CC
355	UTERINE, ADNEXA PROC FOR NON-OVAR/ADNEX MALIG W/O CC
356	FEMALE REPRO SYST RECONSTRUCTIVE PROC
358	UTERINE & ADNEXA PROC FOR NON-MALIG WITH CC
359	UTERINE & ADNEXA PROC FOR NON-MALIG W/O CC
360	VAGINA, CERVIX & VULVA PROC
361	LAP & INCISIONAL TUBAL INTERRUPTION
362	ENDOSCOPIC TUBAL INTERRUPTION
363	D&C, CONIZATION & RADIO-IMPLANT, FOR MALIG
364	D&C, CONIZATION EXC FOR MALIG
365	OTHER FEMALE REPRO SYS OR PROC
366	MALIGNANCY, FEMALE REPRO SYS W CC
367	MALIGNANCY, FEMALE REPRO SYS W/O CC
368	INFECTIONS, FEMALE REPRO SYSTEM
369	MENSTRUAL & OTH FEMALE REPRO SYST DISORDERS
370	CESAREAN SECTION W CC
373	VAGINAL DELIVERY W/O COMPLICATING DIAG
376	POSTPARTUM AND POST ABORTION DIAG W/O OR PROC
377	POSTPARTUM AND POST ABORTION DIAG W OR PROC
378	ECTOPIC PREGNANCY
379	THREATENED ABORTION
380	ABORTION W/O C&C
381	ABORTION WITH D&C, ASPIRATION CURETTAGE, OR HYSTER
383	OTH ANTEPARTUM DIAG W MEDICAL COMPLICATIONS
384	OTH ANTEPARTUM DIAG W/O MED COMPLICATIONS
395	RED BLOOD CELL DISORDERS AGE>17
409	RADIOTHERAPY
410	CHEMOTHERAPY W/O ACUTE LEUKEMIA AS SECONDARY DIAG
414	OTH MYELOPROLIF DISORD OR POOR DIFF NEOPL DIAG
415	OR PROC FOR INFECTIOUS & PARASITIC DISEASES
418	POSTOPERATIVE & POST-TRAUMATIC INFECTIONS
442	OTHER OR PROC FOR INJURIES W CC
453	COMPLICATIONS OF TREATMENT W/O CC
465	AFTERCARE W HISTORY OF MALIGNANCY AS SECONDARY DIAG
467	OTH FACTORS INFLUENCING HEALTH STATUS
468	EXTENSIVE OR PROCEDURE UNRELATED TO PRINCIPAL DIAG
475	RESPIRATORY SYST DIAG W VENTILATOR SUPPORT

DRG PROCEDURE

 477 NON-EXTENSIVE OR PROC UNRELATED TO PRINCIPAL DIAG

ORTHOPEDIC SERVICE

DRG PROCEDURE

 005 EXTRACRANIAL VASCULAR PROC
 006 CARPAL TUNNEL RELEASE
 007 PERIPH & CRANIAL NERVE & OTH NERV SYST PROC W CC
 008 PERIPH & CRANIAL NERVE & OTH NERV SYST PROC W/O CC
 009 SPINAL DISORDERS & INJURIES
 019 CRANIAL & PERIPHERAL NERVE DISORDERS W/O CC
 027 TRAUMATIC STUPOR & COMA, COMA>1 HR
 028 TRAUMATIC STUPOR & COMA, COMA>1 HR>AGE 17 W CC
 029 TRAUMATIC STUPOR & COMA, COMA>1 HR>AGE 17 W/O CC
 084 MAJOR CHEST TRAUMA W/O CC
 131 PERIPHERAL VASCULAR DISORDERS W/O CC
 210 HIP & FEMUR PRO EXC MAJOR JOINT AGE>17 W CC
 211 HIP & FEMUR PRO EXC MAJOR JOINT AGE>17 W/O CC
 212 HIP & FEMUR PRO EXC MAJOR JOINT AGE 0-17
 214 BACK & NECK PRO W CC
 215 BACK & NECK PROC W/O CC
 217 WND DEBRID & SKIN GRFT EX HAND
 218 LOWER EXTREM & HUMER PROC EXC HIP, FOOT, FEMUR AGE>17
 219 LOWER EXTREM & HUMER PROC EXC HIP, FOOT, FEMUR W/O CC
 220 LOWER EXTREM & HUMER PROC EXC HIP, FOOT, FEMUR, 0-17
 221 KNEE PROC W CC
 222 KNEE PROC W/O CC
 223 MAJOR SHOULDER/ELBOW PROC, OR OTH UPPER EXTREMITY
 224 SHOULDER, ELBOW OR FOREARM PROC, EXC MAJOR JOINT PROC
 225 FOOT PROCEDURES
 226 SOFT TISSUE PROCEDURES WITH CC
 227 SOFT TISSUE PROCEDURES W/O CC
 228 MAJOR THUMB OR JOINT PROC, OR OTH HAND OR WRIST PROC
 229 HAND OR WRIST PROC, EXCEPT MAJOR JOINT PROC
 230 LOCAL EXCISION & REMOVAL OF INT FIX DEVICES HIP/FEMUR
 231 LOCAL EXCISION & REMOVAL OF INT FIX DEVICES EXC HIP
 232 ARTHROSCOPY
 234 OTH MUSCULOSKELETAL SYS & CONN TISS
 235 FRACTURES OF FEMUR
 236 FRACTURES OF HIP & PELVIS
 239 PATHOLOGICAL FRACTURES & MUSCSKELETAL & CONN TISSUE
 241 CONNECTIVE TISSUE DISORDERS W/O CC
 243 MEDICAL BACK PROBLEMS
 245 BONE DISEASES & SEPTIC ARTHROPATHIES W/O CC
 246 NON-SPECIFIC ARTHROPATHIES
 247 SIGNS & SYMPTOMS OF MUSCULOSKELETAL SYST
 248 TENDONITIS, MYOSITIS & BURSITIS
 249 AFTERCARE, MUSCULOSKELETAL SYST & CONN TISSUE

DRG PROCEDURE

250 FX, SPRN, STRN & DISL OF FOREARM, HAND, FOOT AGE>17
 251 FX, SPRN, STRN & DISL OR FOREARM, HAND, FOOT W/O CC
 252 FX, SPRN, STRN & DISL OR FOREARM, HAND, FOOT AGE 0-17
 253 FX, SPRN, STRN & DISL OF UPARM, LOWLEG EX FOOT W CC
 254 FX, SPRN, STRN & DISL OF UPARM, LOWLEG EX FOOT W/O CC
 255 FX, SPRN, STRN & DISL OF UPARM, LOWLEG EX FOOT AGE 0-17
 256 OTH MUSCULOSKELETAL SYST & CONN TISSUE DIAGNOSES
 264 SKIN GRAFT &/OR DEBRID FOR SKIN ULCER OR CELLUT
 266 SKIN GRAFT &/OR DEBRID EXC FOR SKIN ULCER OR CELLUT
 270 OTHER SKIN, SUBCUT TISS & BREAST PRO W/O CC
 277 CELLULITIS AGE>17 W CC
 278 CELLULITIS AGE>17 W/O CC
 281 TRAUMA TO DKIN, SUBCUT TISS & BREAST AGE>17 W/O CC
 284 MINOR SKIN DISORDERS W/O CC
 359 UTERINE & ADNEXA PROC FOR NON-MALIG W/O CC
 394 OTHER OR PROCEDURES OF THE BLOOD & BLOOD FORMING ORGANS
 399 RETICULOEDNDOTHELIAL & IMMUNITY DISORDERS W/O CC
 415 OR PROCEDURE FOR INFECTIOUS & PARASITIC DISEASES
 418 POSTOPERATIVE & POST-TRAUMATIC INFECTIONS
 439 SKIN GRAFTS FOR INJUREIS
 440 WOUND DEBRIDEMENTS FOR INJUREIS
 441 HAND PROCEDURES FOR INJURIES
 443 OTH OR PROC FOR INJURIES W/O C
 444 TRAUMATIC INJURY AGE>17 W CC
 445 TRAUMATIC INJURY AGE>17 W/O CC
 446 TRAUMATIC INJURY AGE 0-17
 449 POISONONG AND TOXIC EFFECTS OF DRUSG AGE>17 W CC
 452 COMPLICATIONS OF TREATMENT W CC
 453 COMPLICATIONS OF TREATMENT W/O CC
 455 OTH INJURY, POISONING & TOXI EFF DIAG W/O CC
 462 REHABILITATION
 465 AFTERCARE W HISTORY OF MALIG AS SECONDARY DIAG
 466 AFTERCARE W/O HISTORY OF MALIG AS SECONDARY DIAG
 468 EXTENSIVE OR PROC UNRELATED TO PRINCIPAL DIAG
 477 NON-EXTENSIVE OR PROC UNRELATED TO PRINCI DIAG
 485 LIM REATTACH, HIP AND FEMUR PROCS FOR MULTI TRAUMA

Appendix G

Selected OR Procedures

GENERAL SURGERY SERVICE

DRG PROCEDURE

148 MAJOR SMALL & LARGE BOWEL PROC WITH CC
149 MAJOR SMALL & LARGE BOWEL PROC W/O CC
155 STOMACH, ESOPHAGEAL & DUODENAL PROC AGE>17 W/O CC
158 ANAL AND STOMAL PROC W/O CC
160 HERNIA PROC EXCEPT INGUINAL & FEMORAL AGE>17 W/O CC
162 INGUINAL & FEMORAL HERNIA PROC AGE>17 W/O CC
171 OTHER DIGESTIVE SYSTEM O.R. PROC W/O CC
172 DIGESTIVE MALIGNANCY WITH CC
173 DIGESTIVE MALIGNANCY W/O CC
188 OTHER DIGESTIVE SYSTEM DIAGNOSES AGE>17 WITH CC
189 OTHER DIGESTIVE SYSTEM DIAGNOSES AGE>17 W/O CC
208 DISORDERS OF THE BILIARY TRACT W/O CC
257 TOTAL MASTECTOMY FOR MALIGNANCY WITH CC
258 TOTAL MASTECTOMY FOR MALIGNANCY W/O CC
260 SUBTOTAL MASTECTOMY FOR MALIGNANCY W/O CC
261 BREAST PROC FOR NON-MALIGNANCY EXC BIOPSY & LOCAL
EXCISION
262 BREAST BIOPSY & LOCAL EXCISION FOR NON-MALIGNANCY
267 PERIANAL & PILONICAL PROC
269 OTHER SKIN, SUBCUT TISS & BREAST PROC WITH CC
270 OTHER SKIN, SUBCUT TISS & BREAST PROC W/O CC
275 MALIGNANT BREAST DISORDERS W/O CC
290 THYROID PROC
493 LAPROSCOPIC CHOLECYSTECTOMY W/O C.D.E. WITH CC
494 LAPROSCOPIC CHOLECYSTECTOMY W/O C.D.E. W/O CC

OPHTHALMOLOGY SERVICE

DRG PROCEDURE

008 PERIPH & CRANIAL NERVE & OTH NERV SYST PROC W/O CC
039 LENS PROC WITH OR W/O VITRECTOMY
040 EXTRAOCULAR PROC EXCEPT ORBIT AGE>17
041 EXTRAOCULAR PROC EXCEPT ORBIT AGE 0-17
042 INTRAOCULAR PROC EXCEPT RETINA, IRIS & LENS
048 OTHER DISORDERS OF THE EYE AGE 0-17
268 SKIN, SUBCUTANEOUS TISSUE & BREAST PLASTIC PROC

UROLOGY SERVICE

DRG PROCEDURE

305 KIDNEY, URETER & MAJ BLADDER PROC FOR NON-NEOPL W/O CC
 306 PROSTATECTOMY WITH CC
 310 TRANSURETHRAL PROC WITH CC
 311 TRANSURETHRAL PROC W/O CC
 314 URETHRAL PROC, AGE 0-17
 316 RENAL FAILURE
 323 URINARY STONES WITH CC AND/OR ESW LITHOTRIPSY
 324 URINARY STONES W/O CC
 326 KIDNEY & URINARY TRACT SIGNS & SYMPTOMS AGE>17 W/O CC
 328 URETHRAL STRICTURE AGE>17 WITH CC
 329 URETHRAL STRICTURE AGE>17 E/O CC
 331 OTHER KIDNEY & URINARY TRACT DIAGNOSES AGE>17 WITH CC
 334 MAJOR MALE PELVIC PROC WITH CC
 336 TRANSURETHRAL PROSTATECTOMY WITH CC
 337 TRANURETHRAL PROSTATECTOMY O/O CC
 339 TESTES PROC, NON-MALIGNANCY AGE>17
 340 TESTES PROC, NON-MALIGNANCY AGE 0-17
 341 PENIS PROC
 342 CIRCUMCISION AGE>17
 343 CIRCUMCISION AGE 0-17
 344 OTHER MALE REPRODUCTIVE SYSTEM O.R. PROC FOR MALIGNANCY
 346 MALIGNANCY, MALE REPRODUCTIVE SYSTEM, WITH CC
 347 MALIGNANCY, MALE REPRODUCTIVE SYSTEM, W/O CC
 356 FEMALE REPRODUCTIVE SYSTEM RECONSTRUCTIVE PROC
 408 MYELOPROLIF DISORD OR POORLY DIFF NEOPL WITH OTHER O.R.
 PROC
 452 COMPLICATIONS OF TREATMENT WITH CC
 477 NON-EXTENSIVE O.R. PROC UNRELATED TO PRINCIPAL DIAG

GYNECOLOGY SERVICE

DRG PROCEDURE

356 FEMALE REPRODUCTIVE SYSTEM RECONSTRUCTIVE PROC
 358 UTERINE & ADNEXA PROC FOR NON-MALIGNANCY WITH CC
 359 UTERINE & ADNEXA PROC FOR NON-MALIGNANCY W/O CC
 360 VAGINA, CERVIX & VULVA PROC
 361 LAPAROSCOPY & INCISIONAL TUBAL INTERRUPTION
 362 ENDOSCOPIC TUBAL INTERRUPTION
 364 D&C, CONIZATION EXCEPT FOR MALIGNANCY
 368 INFECTIONS, FEMALE REPRODUCTIVE SYSTEM
 369 MENSTRUAL & OTHER FEMALE REPRODUCTIVE SYSTEM DISORDERS
 378 ECTOPIC PREGNANCY
 380 ABORTION W/O D&C
 381 ABORTION WITH D&C, ASPIRATION CURETTAGE, OR HYSTEROTOMY

ORTHOPEDIC SERVICE

DRG PROCEDURE

210 HIP & FEMUR PROC EXCEPT MAJOR JOINT AGE>17 WITH CC
211 HIP & FEMUR PROC EXCEPT MAJOR JOINT AGE>17 W/O CC
218 LOWER EXTREM & HUMER PROC EXC HIP, FOOT, FEMUR AGE>17
W/CC
219 LOWER EXTREM & HUMER PROC EX HIP, FOOT, FEMUR AGE>17
W/O CC
220 LOWER EXTREM & HUMER PROC EXCEPT HIP, FOOT, FEMUR AGE
0-17
221 KNEE PROC WITH CC
222 KNEE PROC W/O CC
223 MAJOR SHOULDER/ELBOW PROC, OR OTH UPPER EXTREMITY PROC
W CC
224 SHOULDER, ELBOW OR FOREARM PROC, EXC MAJOR JOINT
PROC, W/O CC
225 FOOT PROC
229 HAND OR WRIST PROC, EXCEPT MAJOR JOINT PROC, W/O CC
232 ARTHROSCOPY
441 HAND PROC FOR INJURIES
477 NON-EXTENSIVE O.R. PROC UNRELATED TO PRINICIPAL
DIAGNOSIS

Appendix H

LACH FY94 CHAMPUS Procedures

GENERAL SURGERY SERVICE

#	DRG	PROCEDURE
1	148	MAJOR SMALL & LARGE BOWEL PROC WITH CC
3	188	OTHER DIGESTIVE SYSTEM DIAGNOSES AGE>17 WITH CC
1	189	OTHER DIGESTIVE SYSTEM DIAGNOSES AGE>17 W/O CC
2	208	DISORDERS OF THE BILIARY TRACT W/O CC
1	257	TOTAL MASTECTOMY FOR MALIGNANCY WITH CC
1	258	TOTAL MASTECTOMY FOR MALIGNANCY W/O CC
2	493	LAPROSCOPIC CHOLECYSTECTOMY W/O C.D.E. WITH CC
2	494	LAPROSCOPIC CHOLECYSTECTOMY W/O C.D.E. W/O CC

OPHTHALMOLOGY SERVICE

#	DRG	PROCEDURE
1	040	EXTRAOCULAR PROC EXCEPT ORBIT AGE>17

UROLOGY SERVICE

#	DRG	PROCEDURE
3	316	RENAL FAILURE
2	324	URINARY STONES W/O CC
1	326	KIDNEY & URINARY TRACT SIGNS & SYMPTOMS AGE>17 W/O CC
1	331	OTHER KIDNEY & URINARY TRACT DIAGNOSES AGE>17 WITH CC
3	334	MAJOR MALE PELVIC PROC WITH CC
1	452	COMPLICATIONS OF TREATMENT WITH CC
1	477	ON-EXTENSIVE O.R. PROC UNRELATED TO PRINCIPAL DIAG

GYNECOLOGY SERVICE

#	DRG	PROCEDURE
5	356	FEMALE REPRODUCTIVE SYSTEM RECONSTRUCTIVE PROC

#	DRG	PROCEDURE
12	358	UTERINE & ADNEXA PROC FOR NON-MALIGNANCY WITH CC
22	359	UTERINE & ADNEXA PROC FOR NON-MALIGNANCY W/O CC
1	368	INFECTIONS, FEMALE REPRODUCTIVE SYSTEM
3	369	MENSTRUAL & OTHER FEMALE REPRODUCTIVE SYSTEM DISORDERS
2	378	ECTOPIC PREGNANCY
1	380	ABORTION W/O D&C
3	381	ABORTION WITH D&C, ASPIRATION CURETTAGE, OR HYSTEROTOMY

ORTHOPEDIC SERVICE

#	DRG	PROCEDURE
1	219	LOWER EXTREM & HUMER PROC EX HIP, FOOT, FEMUR AGE >17 w/O CC

Appendix I

NACH FY94 CHAMPUS Procedures

GENERAL SURGERY SERVICE

#	DRG	PROCEDURE
3	148	MAJOR SMALL & LARGE BOWEL PROC WITH CC
1	149	MAJOR SMALL & LARGE BOWEL PROC W/O CC
1	188	OTHER DIGESTIVE SYSTEM DIAGNOSES AGE>17 WITH CC
1	261	BREAST PROC FOR NON-MALIGNANCY EXC BIOPSY & LOCAL EXCISION

UROLOGY SERVICE

#	DRG	PROCEDURE
1	310	TRANSURETHRAL PROC WITH CC
3	311	TRANSURETHRAL PROC W/O CC
2	316	RENAL FAILURE
3	323	URINARY STONES WITH CC AND/OR ESW LITHOTRIPSY
1	331	OTHER KIDNEY & URINARY TRACT DIAGNOSES AGE>17 WITH CC
1	337	TRANURETHRAL PROSTATECTOMY O/O CC
1	339	TESTES PROC, NON-MALIGNANCY AGE>17
1	452	COMPLICATIONS OF TREATMENT WITH CC

GYNECOLOGY SERVICE

#	DRG	PROCEDURE
4	358	UTERINE & ADNEXA PROC FOR NON-MALIGNANCY WITH CC
6	359	UTERINE & ADNEXA PROC FOR NON-MALIGNANCY W/O CC

ORTHOPEDIC SERVICE

#	DRG	PROCEDURE
1	219	LOWER EXTREM & HUMER PROC EX HIP, FOOT, FEMUR AGE >17 W/O CC
1	220	LOWER EXTREM & HUMER PROC EXCEPT HIP, FOOT, FEMUR AGE 0-17
1	222	KNEE PROC W/O CC

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